

Date: Monday, 04/02/2008 1:02:09 PM
 User: Linda Lacelle

Process Sheet

Customer : CU-DAR001 Dart Helicopters Services Drawing Name : BUBBLE DOOR 412 VERTICLE REFERENCE
 Job Number : 37191
 Estimate Number : 13138
 P.O. Number :
 This Issue : 04/02/2008 S.O. No. :
 Prsht Rev. : NC Part Number : D36761
 Drawing Number : D3676 - PROTOTYPE
 Project Number : 00224
 First Issue : / / Type : THERMOFORMING Drawing Revision : A
 Material :
 Previous Run :
 Due Date : 11/02/2008 Qty: 2 Um: Each
 Written By :
 Checked & Approved By :
 Comment : Est. Rev A New Product 01/24/2008 DL

PROTOTYPE

Additional Product

Job Number:



Seq. #: Machine Or Operation: Description :

1.0 MACRLICS250 Plexiglass G .250



Comment: Qty.: 13.0000 sf(s)/Unit Total: 26.0000 sf(s)
 0.250" PLEXIGLAS G CLEAR CAST ACRYLIC SH

1) Batch # M 105766

MACRLICS250 (x2)
 ASPEN ENGINEERING MACRYLICS 177 (x1) M105075

2.0 HAND FINISH TH HAND FINISHING THERMOFORMING



Comment: HAND FINISHING THERMOFORMING

1) Cut Blanks to 30" by 48"

DL 08.02.04

(x2)
(x1)

3.0 THERMOFORMING THERMOFORMING MACHINE



Comment: THERMOFORMING MACHINE

Thermoform: as per Dwg. D3676 and Folio FTA 018

Dwg. Rev. ~~A~~

Folio Rev. A

250 - (x2) - PTO.
 177 - (x1)

DL 08.02.04

4.0 QC2 INSPECT PARTS AS THEY COME OFF MACHINE



Comment: INSPECT PARTS AS THEY COME OFF MACHINE

1) Check Surface finish for undesired marks, voids, dimples etc.

2) Check depth of bubble to ensure conformity to drawing tolerances.

250 - (x1)
 177 - (x1) ←

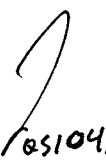



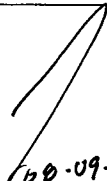

DL 08.02.04

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: D 3676-1 PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

QA: N/C Closed: _____ Date: _____

NCR: 37191		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			
08.01.25	3	TEAR IN MATERIAL WHILE THERMOFORMING. FIRST PART.	 08/01/25	SCRAP AND REPLACE WITH .177" SAMPLE PART. for test + project 00224 only	08.01.25 	 08.09.05	 08/01/25	 08.09.05
08-09-04	4.0	<ul style="list-style-type: none"> 177" thick material used. MACrylics .177. / instead of .250" Overall width is too wide, due to flanges being trimmed too wide. 						
		<ul style="list-style-type: none"> Overall bubble thickness is under the tolerance due to .177 material being used. 						

NOTE: Date & initial all entries

Date: Monday, 04/02/2008 1:02:09 PM
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Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: BUBBLE DOOR 412 VERTICLE REFERENCE

Job Number: 37191

Part Number: D36761

Job Number:



Seq. #:

Machine Or Operation:

Description :

5.0

QC8

SECOND CHECK



P70

Comment: SECOND CHECK

08.09.05

6.0

HAND FINISH TH

HAND FINISHING THERMOFORMING



Comment: HAND FINISHING THERMOFORMING

- 1) Trim off excess flange material
- 2) Buff out any light scratches or blemishes
- 3) Etch part number and batch number

.750 x 1

08.02.12 .177 x 1

7.0

QC5

INSPECT WORK TO CURRENT STEP



Comment: INSPECT WORK TO CURRENT STEP

FOR ENGINEERING USE ONLY

- 1) Visually inspect for clarity, and proper formation.

08.09.05 0.177 x 1

8.0

PACKAGING 1

PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1

TESTED TO ACQUIRE DATA AND

ESTABLISH LOWEST MATERIAL THICKNESS ACCEPTABLE. THEN SCRAPED.

9.0

QC21

FINAL INSPECTION/W/O RELEASE



Comment: FINAL INSPECTION/W/O RELEASE

08.09.05

09/02/18

Job Completion




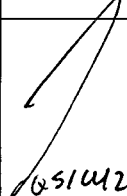
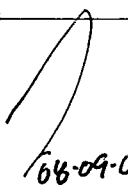


U 09.02.18

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: D3676-1 PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

QA: N/C Closed: _____ Date: _____

NCR: <u>37191</u>		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			
08-09-05	5.	1 unit used to make jig for structural testing.	 08/09/05	Scrap. 1 Unit. for testing code 00224 only	08-09-05 DH 	 08-09-05	 08/09/05	 08-09-05

NOTE: Date & initial all entries

PROTOTYPE REQUEST FORM

DART Aerospace Ltd.

Product #: D412-761

Job #: 00224A

Date: 08.01.25

Product Name: VERTICAL REFERENCE DOOR

Requested By: MB

Design Manager Approval: 

Quantity	Part Number	Description	Drawing Date	Material Cert Req'd?	Due Date	Comments	Date Completed
2	D3676-1	BUBBLE WINDOW	N/A	YES	WEEK OF FEB 01	REVERSE ENGINEERING DRAWING	

DART AEROSPACE LTD	Work Order: 37191
Description: Prototype bubble window 1412	Part Number: 03676-1
Inspection Dwg: 3676 Rev: A	Page 1 of 1

FIRST ARTICLE INSPECTION CHECKLIST

☒ First Article ☒ Prototype

THERMOFORMING SECTION

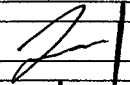
Description	Accept	Reject	Method of Inspection	Comments
Inside Radii less than _____"				
Shape Definition	✓			
Texture Retention		✓		Window not polished
Material imperfections such as bumps, cracks, voids, <u>scratching</u>		✓		Voids & scratches left on for testing per project 00224

Measured by: _____

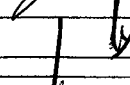
Date: _____

TRIMMING SECTION

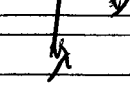
	Drawing Dimension	Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
0-5"	0.105" min	Min	.084		X	ultrasonic vern	Acceptable per project 00224 test
5"-8"	0.095" min	Min	.069		X	ultrasonic vern	Acceptable per project 00224 test
9"-	0.065" min	Min	0.041		X	ultrasonic vern	Acceptable per project 00224 test
depth	17.0"	± 0.50"	16.75	X		Tape	
width	29.1	± .100	30.09		X	Tape	Acceptable per project 00224 test
height	46.0	± .100	47.250		X	Tape	" "
curve	24.6	± .100	25.5		X	Tape	" "

Measured by: 

Date: 08/09/04

Audited by: 

Date: 08.09.04

Prototype Approval: 

Date: 08.09.04

Rev	Date	Change	Revised by	Approved
A		New Issue	KJ/DL	

11
25.5

00.17

00.17

~~22.5~~

41.25

~~22.5~~ 41.25



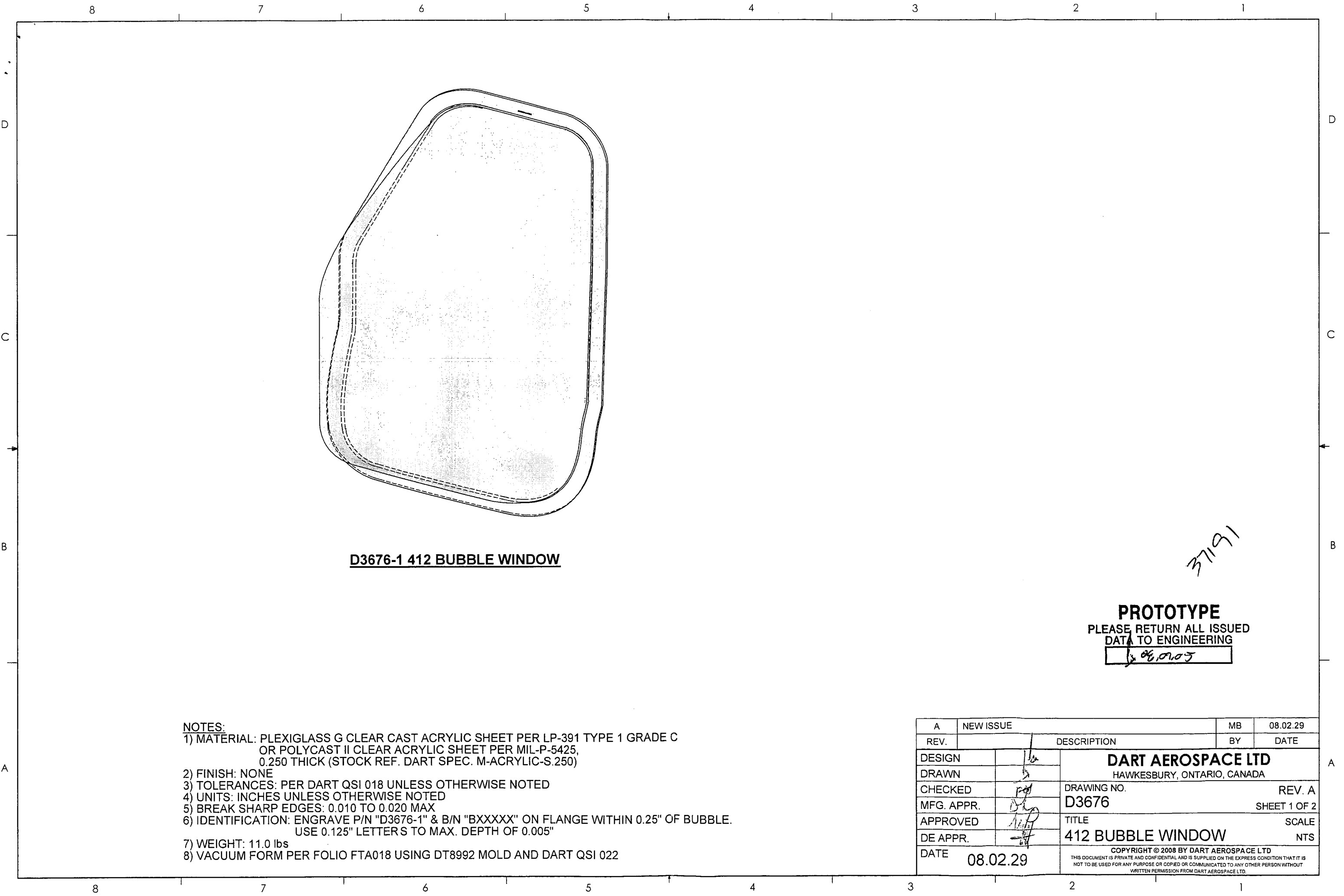
30.09

50.00

1.12.5

1.62.5

417.250



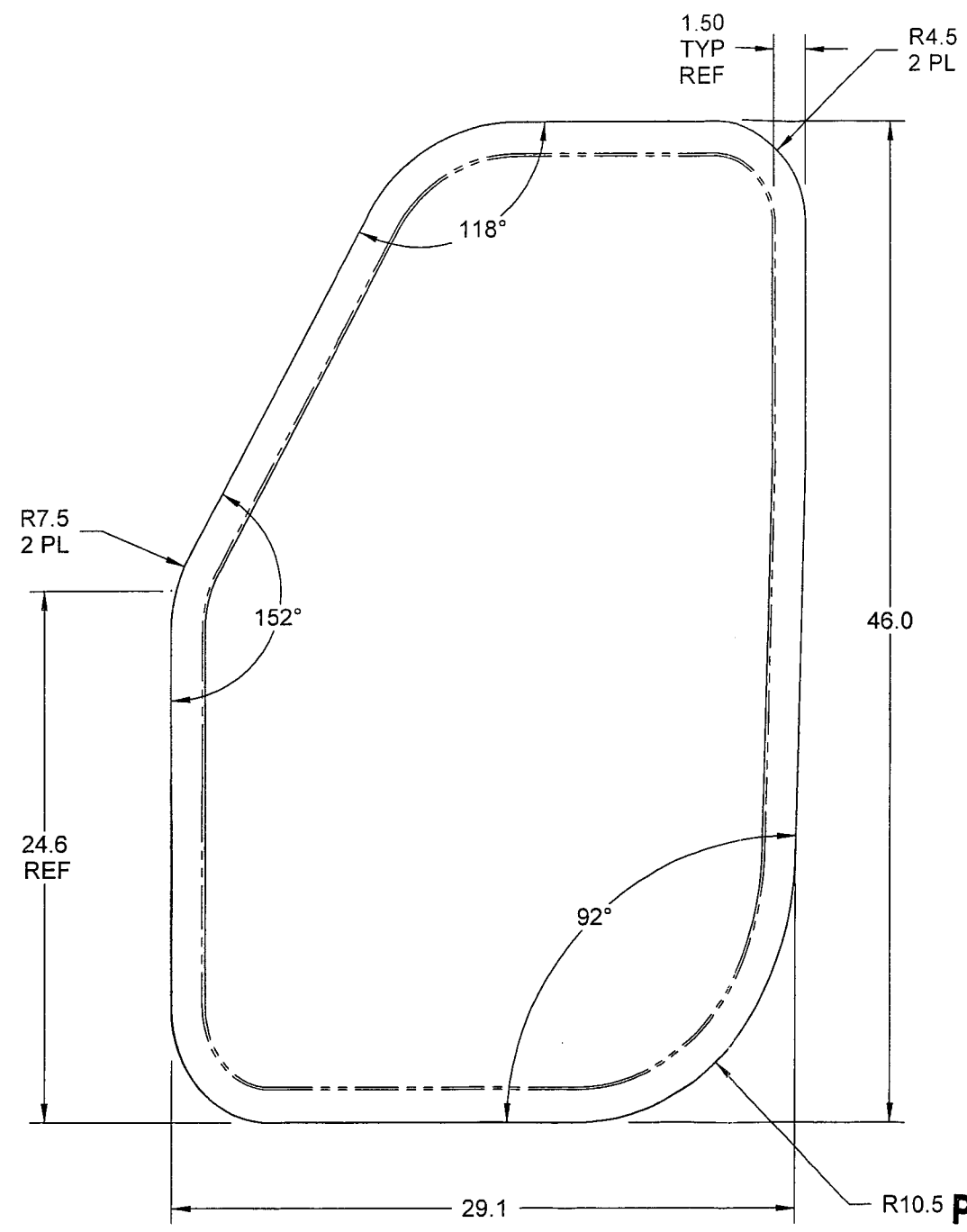
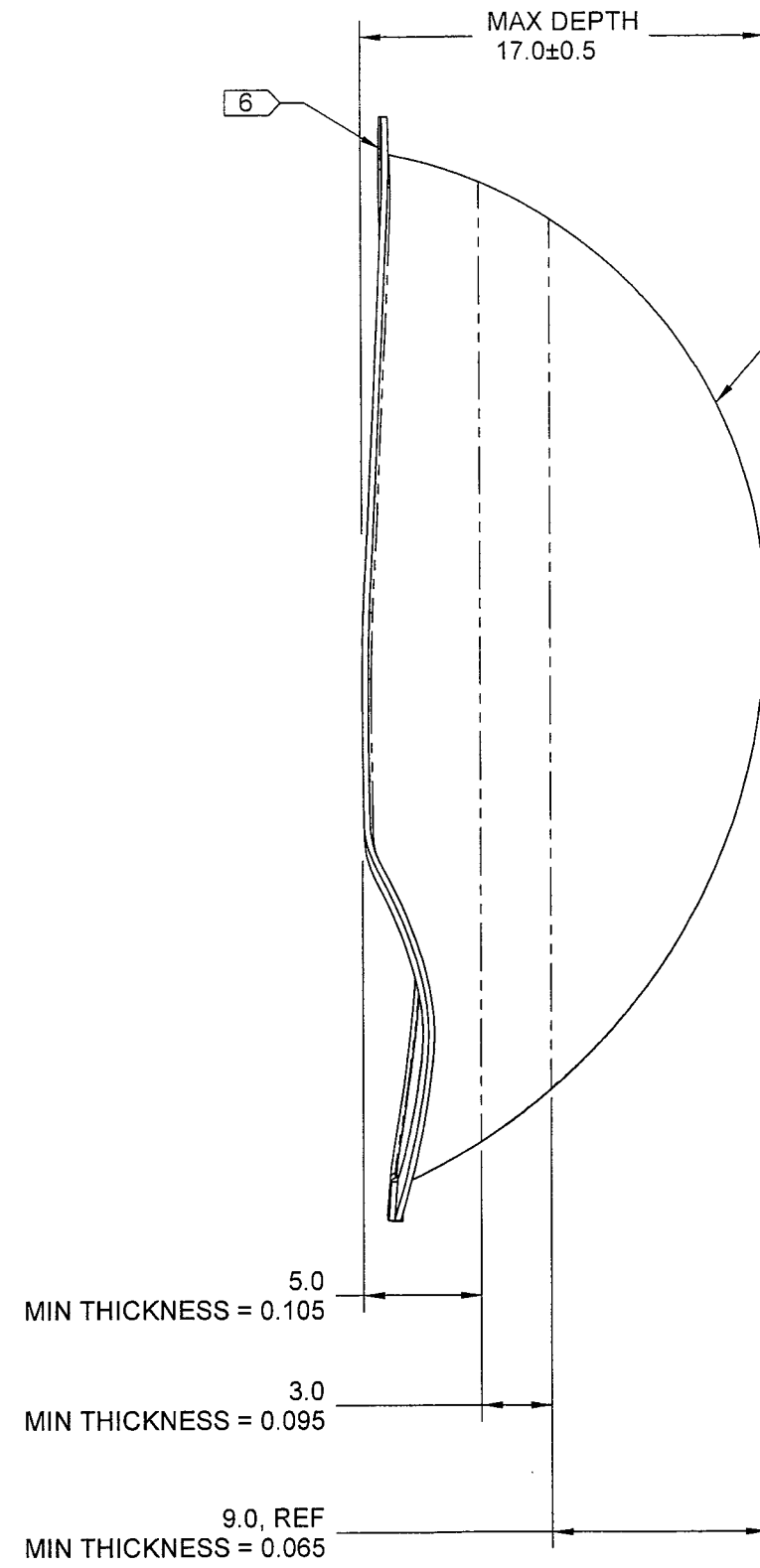
D3676-1 412 BUBBLE WINDOW

37191

PROTOTYPE
PLEASE RETURN ALL ISSUED
DATA TO ENGINEERING
08.02.29

- NOTES:**
1) MATERIAL: PLEXIGLASS G CLEAR CAST ACRYLIC SHEET PER LP-391 TYPE 1 GRADE C
OR POLYCAST II CLEAR ACRYLIC SHEET PER MIL-P-5425,
0.250 THICK (STOCK REF. DART SPEC. M-ACRYLIC-S.250)
2) FINISH: NONE
3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
4) UNITS: INCHES UNLESS OTHERWISE NOTED
5) BREAK SHARP EDGES: 0.010 TO 0.020 MAX
6) IDENTIFICATION: ENGRAVE P/N "D3676-1" & B/N "BXXXXX" ON FLANGE WITHIN 0.25" OF BUBBLE.
USE 0.125" LETTERS TO MAX. DEPTH OF 0.005"
7) WEIGHT: 11.0 lbs
8) VACUUM FORM PER FOLIO FTA018 USING DT8992 MOLD AND DART QSI 022

A	NEW ISSUE	MB	08.02.29
REV.	DESCRIPTION	BY	DATE
DESIGN		DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWN			
CHECKED		DRAWING NO.	REV. A
MFG. APPR.		D3676	SHEET 1 OF 2
APPROVED		TITLE	SCALE
DE APPR.		412 BUBBLE WINDOW	NTS
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37191

PROTOTYPE
PLEASE RETURN ALL ISSUED
DATA TO ENGINEERING
12 08 05

D3676-1 412 BUBBLE WINDOW

DESIGN		DART AEROSPACE LTD	
DRAWN		HAWKESBURY, ONTARIO, CANADA	
CHECKED		DRAWING NO.	REV. A
MFG. APPR.		D3676	SHEET 2 OF 2
APPROVED		TITLE	SCALE
DE APPR.		412 BUBBLE WINDOW	NTS
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